NEELIMA INSTITUTE OF MEDICAL SCIENCES.

CAL-Computer Assisted Learning in Pharmacology

The Computer Assisted Learning (CAL) laboratory at Neelima Institute of Medical Sciences represents a modern, technology-driven approach to pharmacology education for 2nd year MBBS students.

Equipped with 58 computers and high-speed internet connectivity, this facility utilizes MyCalPharm software featuring 32 specialized modules to deliver simulated pharmacology experiments, aligning with National Medical Commission (NMC) guidelines for ethical medical education.

Laboratory Infrastructure

Hardware Specifications

The CAL laboratory at Neelima Institute houses 58 desktop computers with high-speed broadband internet connectivity. This configuration allows for individual student access during practical sessions, ensuring personalized learning experiences. The laboratory includes audio-visual aids for enhanced computer-assisted teaching-learning activities, making it a shared resource across departments for comprehensive medical education.

Software Platform

The laboratory utilizes MyCalPharm software, developed by Infokart India Pvt Ltd in collaboration with distinguished pharmacology experts Dr. Ramasamy Raveendran and Dr. Chandragouda R. Patil. This comprehensive platform features 32 interactive modules covering essential pharmacology experiments traditionally conducted on live animals.

Key Software Features

MyCalPharm offers three distinct operational modes to enhance learning effectiveness:

Tutorial Mode: Provides comprehensive explanations with animated sequences, live videos, and interactive content to demonstrate experimental procedures and drug mechanisms.

Practice Exam Mode: Allows students to rehearse experiments and test their understanding through simulated scenarios without assessment pressure.

Final/Scheduled Exam Mode: Enables faculty-controlled assessments with detailed reporting capabilities and Excel-format result downloads for academic evaluation.

Core Experimental Modules

1. Drug Effects on Dog Blood Pressure and Heart Rate

This module simulates cardiovascular pharmacology experiments, demonstrating the effects of various drugs on blood pressure and heart rate parameters.

2. Rabbit Eye Experiment

The rabbit eye simulation module covers mydriatic and miotic drug effects,pupillary responses to autonomic drugs.

NMC Guidelines Compliance

The National Medical Commission has established clear directives for incorporating computer-assisted learning in medical education. Through the Minimum Standard Requirements for Medical Colleges (MSR-2020), NMC mandates that "for teaching Pharmacology in undergraduate curriculum, the required knowledge and skills shall be imparted by using computer assisted module".

Ethical Considerations

The implementation of CAL aligns with the Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA) guidelines, which advocate for the 4Rs principle: Reduction, Refinement, Replacement, and Rehabilitation.

The Prevention of Cruelty to Animals Act 1960 specifically states that "experiments on animals are avoided wherever it is possible to do so" in educational institutions.

Educational Benefits

Enhanced Learning Outcomes

Research demonstrates significant educational advantages of CAL implementation:

- Improved Performance: Studies show average test scores increasing from 36% pre-test to 71% post-test following CAL sessions

- Student Satisfaction: 99.2% of students find CAL simulations beneficial, with 98.4% agreeing that CAL helps achieve learning objectives
- Time Efficiency: Experiments can be repeated multiple times without time constraints or animal welfare concerns

Practical Advantages

CAL offers several operational benefits over traditional animal experiments:

- Elimination of animal procurement and maintenance costs
- Standardized experimental conditions reducing biological variability
- Simultaneous access for multiple students
- Risk-free learning environment with no experimental errors

Conclusion

The CAL laboratory at Neelima Institute of Medical Sciences exemplifies modern medical education's evolution toward ethical, technology-enhanced learning.

The facility provides 2nd year MBBS students with innovative access to pharmacology experiments previously requiring live animals. This implementation not only complies with NMC guidelines but also offers superior educational outcomes through standardized, repeatable, and ethically sound learning experiences.

The laboratory represents a significant advancement in pharmacology education, combining technological innovation with regulatory compliance to prepare future healthcare professionals effectively and humanely.